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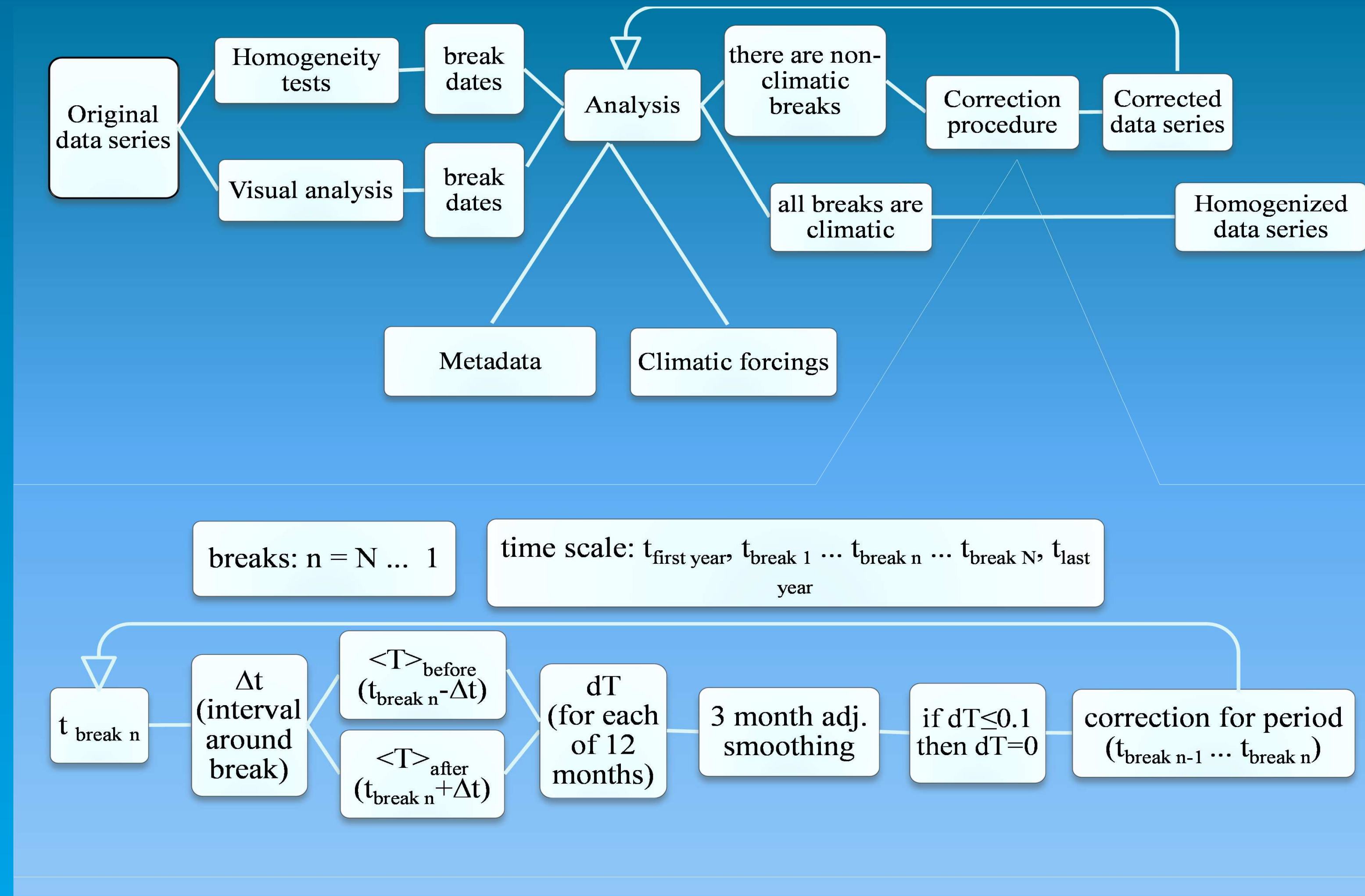


Treated parameters:	Stations:
1. Tmin,	1. Lisbon (from 1856 to 2008),
2. Tmax,	2. Coimbra (from 1865 to 2005)
3. DTR=Tmax-Tmin,	3. Porto (from 1888 to 2001)
4. averT=((Tmax+Tmin)) / 2	

Large volcanic eruptions could cause significant homogeneity breaks.
Dates of major volcanic eruptions from 1850 to 2000. DVI values taken from the NCDC database

Year	DVI	Volcanos	Regions
1855	155	Cotopaxi	Ecuador
1861	164	Makjan/Makian	Indonesia
1875	139	Aksja	Iceland
1883	209	Krakatoa	Indonesia
1888	182	Ritter Island, Bandai-san	Papua New Guinea, Japan
1902	201	St.Maria, Saufriere, Pelee	Guatemala, St. Vincent, Martinique
1963	166.2	Agung	Indonesia
1982	366.1	El Chichon	Mexico
1991	500	Pinatubo	Philippine

Inhomogeneities detection and correction scheme:



The homogeneity tests show strong inhomogeneity of the original data series, which could have both internal climatic and non-climatic origins.

Significant homogeneity breaks (significance 95% or more) that coincide with known dates of instrumental changes have been corrected using standard procedures.

It was also noted that some significant homogeneity breaks, which could not be connected to the known dates of any changes in the park of instruments or stations location and environment, could be caused by the large volcanic eruptions.

The corrected series were again tested for homogeneity: the corrected series were considered free of non-climatic breaks when the tests showed no significant (significance 95% or more) homogeneity breaks that coincide with dates of known instrument changes.

New series will be made available for scientific purposes through requests in the frames of ERA-CLIM - European Re-Analysis of Global Climate Observations project

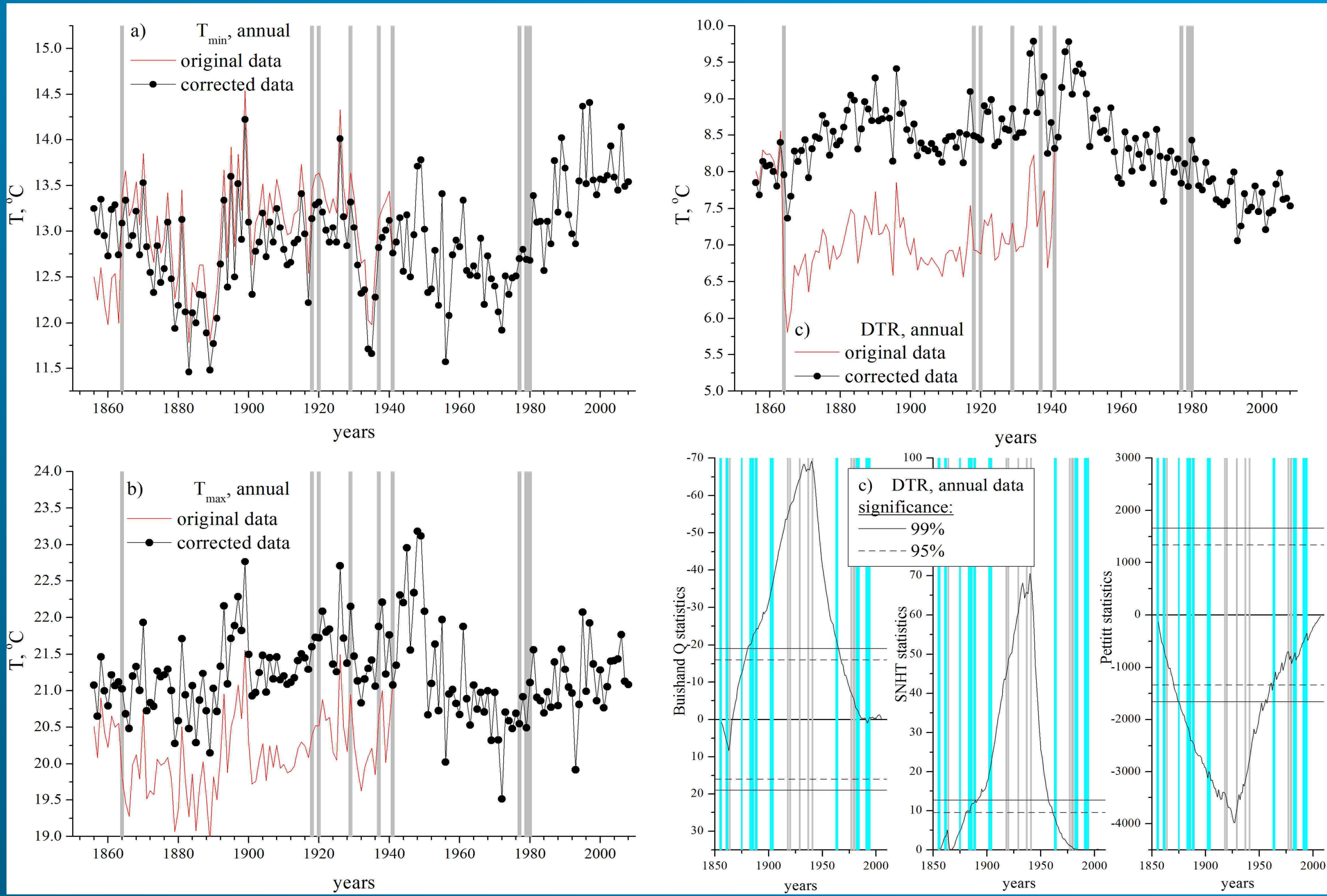
Lisbon (38°43'N, 9°09'W, altitude 77 m)

Homogeneity breaks detected by HT and metadata:

years	character of changes	Correct.	years	character of changes	Correct.
1864	new building (~1 km)	yes	1937	height change (+ 0.7 m)	no
1918	height change (+ 4.1 m)	no	1941	height change (– 22.2 m)	yes
1920	height change (– 4.1 m)	no	1977	observation periodicity	no
1929	height change (+ 4.1 m)	no	1979	relocation	no

Original and corrected series of annual Tmin, Tmax and DTR and HT statistics for DTR.

Solid and dashed horizontal(annual values) lines - 99% and 95% probability. Gray lines - dates of instrumental changes. Cyan lines - volcanic eruptions.



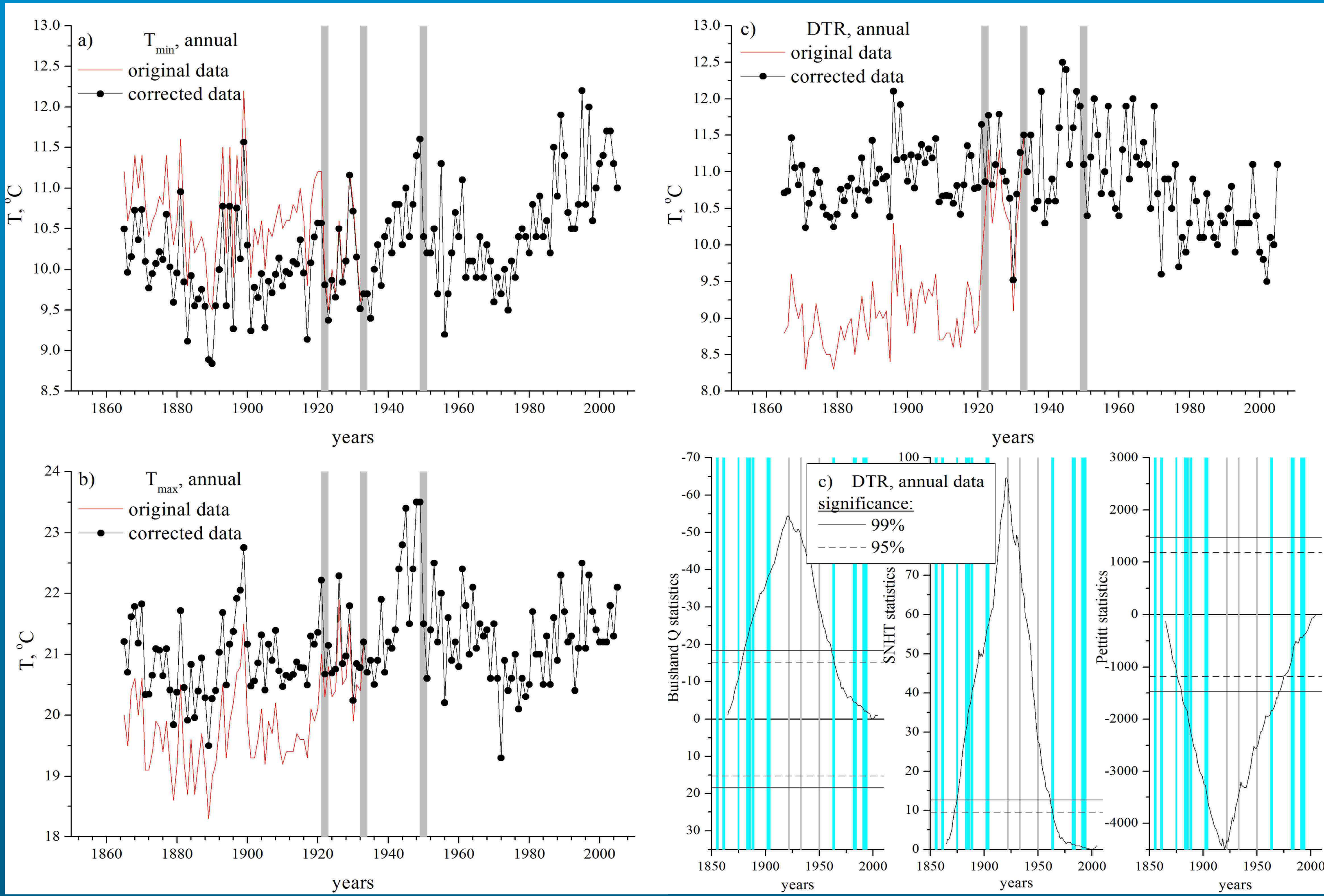
Coimbra (40°12'N, 8°25' W, altitude 141 m)

Homogeneity breaks detected by HT and metadata:

years	character of changes	Correct.
1922	relocation, standard shelter	yes
1933	relocation	yes
1950	height change (0.3 m)	no

Original and corrected series of annual Tmin, Tmax and DTR and HT statistics for DTR.

Solid and dashed horizontal(annual values) lines - 99% and 95% probability. Gray lines - dates of instrumental changes. Cyan lines - volcanic eruptions.



Porto (41°08'N, 8°36' W, altitude 93 m)

Homogeneity breaks detected by HT and metadata:

years	character of changes	Correct.
1916	new location, height change (-9.0 m)	yes
02.1920-09.1922	no measurements, probably new instrument	no
1947	observation time	no
1984	observation time	no

Original and corrected series of annual Tmin, Tmax and DTR and HT statistics for DTR.

Solid and dashed horizontal(annual values) lines - 99% and 95% probability. Gray lines - dates of instrumental changes. Cyan lines - volcanic eruptions.

